CS 303- Logic and Digital System Design
Fall 2023 - 2024

Instructor Information

Name: Atıl Utku Ay
Office: FENS L026
Email: utku.ay@sabanciuniv.edu
Office Hours: Monday 09:40 - 11:30

Schedule

Lectures: Monday 08:40 - 09:30 FENS G077
Thursday 12:40 - 14:30 FENS G077

Recitation: Thursday 17:40 - 18:30 FENS G077

Labs: Monday 09:40 - 11:30 FENS 1033 (A)
Monday 14:40 - 16:30 FENS 1033 (B)
Monday 16:40 - 18:30 FENS 1033 (C)
Tuesday 09:40 - 11:30 FENS 1033 (D)
Tuesday 12:40 - 14:30 FENS 1033 (E)
Tuesday 16:40 - 18:30 FENS 1033 (F)
Wednesday 16:40 - 18:30 FENS 1033 (G)
Thursday 10:40 - 12:30 FENS 1033 (H)

Catalogue Data

Number systems and conversion, Boolean algebra, Boolean function minimization techniques, combina-
tional logic circuit design, state elements (flip- flops), sequential circuits, design and implementation of state machines, Mealy and Moore circuits, higher level digital system design using logic building blocks such multiplexers/decoders, adders, memory and programmable gate arrays, hard-
ware description languages.

Prerequisite & Co-requisite

The class is open to any undergraduate students. There is no prerequisite. The students, who are registered with CS 303, have to be registered with CS 303R and CS 303L.

Outline

• Number Systems & Arithmetic
• Boolean Algebra & Logic Operations
• Gate-Level Minimization

*All information in this document is tentative. The instructor reserves the right to make changes in the semester.
• Analysis & Design of Combinational Logic Circuits
• Analysis & Design of Synchronous Sequential Logic Circuits
• Registers & Counters
• Memory & Design with Programmable Logic
• Design with Algorithmic State Machines (ASM)
• Introduction to Hardware Description Languages

Textbook

Exam Dates
Midterm 1: TBA (possibly 4th or 5th week of the term)
Midterm 2: TBA (possibly 9th or 10th week of the term)
Final: will be scheduled by SR

Grading
• Midterm Exams 36%
• Final Exam 36%
• Take-home Exams (Total 3(±1)) 5% ¹
• Lab Assignments (Total 4(±1)) 13% ²
• Term Project 10% ³

The instructor has the right to have an oral interview for any grading item given in the syllabus.

• Students who will have the oral interview may be selected randomly or according to a suspicious situation observed by TAs or the instructor.
• Performance of the student in an oral examination may affect their grades of the grading item they have been called upon.
• If a student fails to show up at an oral exam, (s)he will automatically get 0 (zero).

The letter grade boundaries will be determined by the instructor at the end of the term. In order to pass the course:

¹The highest grade you can get from an individual take-home exam is 1.5 times of your weighted exam average. For example, if your weighted exam average is 40%, then maximum of each take-home exam grade is 60% even if you get more than that.
²The highest grade you can get from an individual lab assignment is 1.8 times of your weighted exam average. For example, if your weighted exam average is 40%, then maximum of each take-home exam grade is 72% even if you get more than that.
³The highest grade you can get from term project is 1.7 times of your weighted exam average. For example, if your weighted exam average is 40%, then maximum of each take-home exam grade is 68% even if you get more than that.
• The overall grade has to be higher than D/F boundary.
• The Final Exam grade must be at least 25/100.
• The Weighted Exam Average (given below) must be at least 35/100.

\[
WeightedExamAverage = \frac{(Midterm1 \times 0.18) + (Midterm2 \times 0.18) + (Final \times 0.36)}{0.72}
\]

Make-up Policy

• There will be no make-up for take-home exams. Students automatically get 0 (zero) from the respective assignment grade if any of them is missed.

• Make-up is only allowed for the midterm and final examinations to those with an official report and to those with an official permission notice from the university on the date of the exam in question.

• Make-up examinations may be written and/or oral.

Plagiarism Policy (Academic Integrity)

Plagiarism means presenting someone else’s work as yours. This is a very serious and ethical problem. A plagiarized work may or may not be a verbatim copy of another submission. Verbatim copies are of course plagiarized ones. However, if a submission is derived from another one by partially changing some parts, this action is also plagiarism. When a plagiarism case is detected, sanctions are applied to all parties regardless of the actual source of the submission. These sanctions are as follows:

• For the midterm/final examinations,
  – students directly fail the course, even in the first offense.\(^4\)

• For the labs, take-home exams and term project
  – for the first time, all plagiarized submission owners receive 0,
  – the second time, the student fails the course automatically.\(^5\)

\(^4\) Additionally, the case will be referred to the Dean’s Office for disciplinary action. This course does not tolerate any breach of academic integrity (more info on [https://www.sabanciuniv.edu/en/academic-integrity-statement](https://www.sabanciuniv.edu/en/academic-integrity-statement))

\(^5\) See footnote 4